

## **AMENDMENTS TO THE CLAIMS**

Claims 1-38 (Canceled)

Claim 39 (new)      A telephone for transmitting a first transmission signal and receiving a second transmission signal, comprising:

- a modulator operable to modulate a first data stream according to a QPSK to produce a modulated signal;
- a transmitter operable to transmit the modulated signal as the first transmission signal;
- a receiver operable to receive the second transmission signal, wherein the second transmission signal has information of a second data stream and a third data stream, the second data stream is modulated according to a QPSK and the third data stream is modulated according to an n-level QAM; and
- a demodulator operable to demodulate the second transmission signal to produce the second data stream and the third data stream.

Claim 40 (new)      A telephone according to claim 39, wherein n is an integer and equal to or greater than 4.

Claim 41 (new)      A telephone for transmitting a first transmission signal and receiving a second transmission signal, comprising:

- a modulator operable to modulate a first data stream according to a 4-level PSK to produce a modulated signal;
  - a transmitter operable to transmit the modulated signal as the first transmission signal;
  - a receiver operable to receive the second transmission signal,
- wherein the second transmission signal has information of a second data stream and a third data stream, the second data stream is modulated according to a 4-level PSK and the third data stream is modulated according to an n-level PSK; and

- a demodulator operable to demodulate the second transmission signal to produce the second data stream and the third data stream.

Claim 42 (new)      A telephone according to claim 41, wherein  $n$  is an integer and equal to or greater than 4.

Claim 43 (new)      A telephone for transmitting a first transmission signal and receiving a second transmission signal, comprising:

- a modulator operable to assign a first data stream to a constellation in a vector space diagram to produce a modulated signal, wherein the number of signal points of the constellation for the first data stream is 4;

- a transmitter operable to transmit the modulated signal;

- a receiver operable to receive the second transmission signal, wherein the second transmission signal has information of a second data stream and a third data stream, the number of signal points of the constellation for the second data stream is 4, and the number of signal points of the constellation for the third data stream is  $n$ ; and

- a demodulator operable to demodulate the second transmission signal to produce the second data stream and the third data stream.

Claim 44 (new)      A telephone according to claim 43, wherein  $n$  is an integer and equal to or greater than 4.

Claim 45 (new)      A telephone for transmitting a first transmission signal and receiving a second transmission signal, comprising:

- a modulator operable to modulate a first data stream according to a QPSK to produce a first modulated signal;

- a multiplexer operable to convert the first modulated signal to a CDMA converted signal according to CDMA;

- a transmitter operable to transmit the CDMA converted signal as the first transmission signal;

- a receiver operable to receive the second transmission signal, wherein the second transmission signal has information of a second data stream and a third data stream, the second data stream is modulated according to a QPSK, and the third data stream is modulated according to an n-level QAM;

- a de-multiplexer operable to convert the second transmission signal to a second modulated signal according to CDMA; and

- a demodulator operable to demodulate the second modulated signal to produce the second data stream and the third data stream.

Claim 46 (new)      A telephone according to claim 45, wherein n is an integer and equal to or greater than 4.

Claim 47 (new)      A telephone for transmitting a first transmission signal and receiving a second transmission signal, comprising:

- a modulator operable to modulate a first data stream according to a 4-level PSK to produce a first modulated signal;

- a multiplexer operable to convert the first modulated signal to a CDMA converted signal according to CDMA;

- a transmitter operable to transmit the CDMA converted signal as the first transmission signal;

- a receiver operable to receive the second transmission signal, wherein the second transmission signal has information of a second data stream and a third data stream, the second data stream is modulated according to a 4-level PSK, and the third data stream is modulated according to an n-level PSK;

- a de-multiplexer operable to convert the second transmission signal to a second modulated signal according to CDMA; and

- a demodulator operable to demodulate the second modulated signal to produce the second data stream and the third data stream.

Claim 48 (new)      A telephone according to claim 47, wherein  $n$  is an integer and equal to or greater than 4.

Claim 49 (new)      A telephone for transmitting a first transmission signal and receiving a second transmission signal, comprising:

- a modulator operable to assign a first data stream to a constellation in a vector space diagram to produce a first modulated signal, wherein the number of signal points of the constellation for the first data stream is 4;

- a multiplexer operable to convert the first modulated signal to a CDMA converted signal according to CDMA;

- a transmitter operable to transmit the CDMA converted signal as the first transmission signal;

- a receiver operable to receive the second transmission signal, wherein the second transmission signal has information of a second data stream and a third data stream, the number of signal points of the constellation for the second data stream is 4, and the number of signal points of the constellation for the third data stream is  $n$ ;

- a de-multiplexer operable to convert the second transmission signal to a second modulated signal according to CDMA; and

- a demodulator operable to demodulate the second transmission signal to produce the second data stream and the third data stream.

Claim 50 (new)      A telephone according to claim 49, wherein  $n$  is an integer and equal to or greater than 4.

Claim 51 (new)      A base station for receiving a first transmission signal and transmitting a second transmission signal, comprising:

- a modulator operable to modulate a first data stream according to a QPSK and modulate a second data stream according to an n-level QAM to produce modulated signals;
- a transmitter operable to transmit the modulated signals as the second transmission signal;
- a receiver operable to receive the first transmission signal, wherein the first transmission signal has information of a third data stream, and the third data stream is modulated according to a QPSK; and
- a demodulator operable to demodulate the first transmission signal to produce the third data stream.

Claim 52 (new)      A base station according to claim 51, wherein n is an integer and equal to or greater than 4.

Claim 53 (new)      A base station for receiving a first transmission signal and transmitting a second transmission signal, comprising:

- a modulator operable to modulate a first data stream according to a 4-level PSK and modulate a second data stream according to an n-level PSK to produce modulated signals;
- a transmitter operable to transmit the modulated signals as the second transmission signal;
- a receiver operable to receive the first transmission signal, wherein the first transmission signal has information of a third data stream, and the third data stream is modulated according to a 4-level PSK; and
- a demodulator operable to demodulate the first transmission signal to produce the third data stream.

Claim 54 (new)      A base station according to claim 53, wherein n is an integer and equal to or greater than 4.

Claim 55 (new)      A base station for receiving a first transmission signal and transmitting a second transmission signal, comprising:

- a modulator operable to assign a first data stream to a constellation in a vector space diagram and assign a second data stream to a constellation in a vector space diagram to produce modulated signals, wherein the number of signal points of the constellation for the first data stream is 4 and the number of signal points of the constellation for the second data stream is  $n$ ;

- a transmitter operable to transmit the modulated signals as the second transmission signal;

- a receiver operable to receive the first transmission signal, wherein the first transmission signal has information of a third data stream, and the number of signal points of the constellation for the third data stream is 4; and

- a demodulator operable to demodulate the first transmission signal to produce the third data stream.

Claim 56 (new)      A base station according to claim 55, wherein  $n$  is an integer and equal to or greater than 4.

Claim 57 (new)      A base station for receiving a first transmission signal and transmitting a second transmission signal, comprising:

- a modulator operable to modulate a first data stream according to a QPSK and modulate a second data stream according to an  $n$ -level QAM to produce modulated signals;

- a multiplexer operable to convert the modulated signals to a CDMA converted signal according to CDMA;

- a transmitter operable to transmit the CDMA converted signal as the second transmission signal;

- a receiver operable to receive the first transmission signal, wherein the first transmission signal has information of a third data stream, and the third data stream is modulated according to a QPSK;

- a de-multiplexer operable to convert the first transmission signal to a modulated signal according to CDMA; and

- a demodulator operable to demodulate the modulated signal to produce the third data stream.

Claim 58 (new)      A base station according to claim 57, wherein n is an integer and equal to or greater than 4.

Claim 59 (new)      A base station for receiving a first transmission signal and transmitting a second transmission signal, comprising:

- a modulator operable to modulate a first data stream according to a 4-level PSK and modulate a second data stream according to an n-level PSK to produce modulated signals;

- a multiplexer operable to convert the modulated signals to a CDMA converted signal according to CDMA;

- a transmitter operable to transmit the CDMA converted signal as the second transmission signal;

- a receiver operable to receive the first transmission signal, wherein the first transmission signal has information of a third data stream, and the third data stream is modulated according to a 4-level PSK;

- a de-multiplexer operable to convert the first transmission signal to a modulated signal according to CDMA; and

- a demodulator operable to demodulate the modulated signal to produce the third data stream.

Claim 60 (new)      A base station according to claim 59, wherein n is an integer and equal to or greater than 4.

Claim 61 (new)      A base station for receiving a first transmission signal and transmitting a second transmission signal, comprising:

- a modulator operable to assign a first data stream to a constellation in a vector space diagram and assign a second data stream to a constellation in a vector space diagram to produce modulated signals, wherein the number of signal points of the constellation for the first data stream is 4 and the number of signal points of the constellation for the second data stream is  $n$ ;
- a multiplexer operable to convert the modulated signals to a CDMA converted signal according to CDMA;
- a transmitter operable to transmit the CDMA converted signal as the second transmission signal;
- a receiver operable to receive the first transmission signal, wherein the first transmission signal has information of a third data stream, and the number of signal points of the constellation for the third data stream is 4; and
- a de-multiplexer operable to convert the first transmission signal to a modulated signal according to CDMA; and
- a demodulator operable to demodulate the modulated signal to produce the third data stream.

Claim 62 (new)      A base station according to claim 61, wherein  $n$  is an integer and equal to or greater than 4.

Claim 63 (new)      A transmission and receiving method for transmitting a first transmission signal and receiving a second transmission signal, comprising:

- modulating a first data stream according to a QPSK to produce a modulated signal;
- transmitting the modulated signal as the first transmission signal;
- receiving the second transmission signal, wherein the second transmission signal has information of a second data stream and a third data stream, the second data stream is modulated according to a QPSK, and the third data stream is modulated according to an  $n$ -level QAM; and



- demodulating the second transmission signal to produce the second data stream and the third data stream.

Claim 64 (new)      A transmission and receiving method according to claim 63, wherein  $n$  is an integer and equal to or greater than 4.

Claim 65 (new)      A transmission and receiving method for transmitting a first transmission signal and receiving a second transmission signal, comprising:

- modulating a first data stream according to a 4-level PSK to produce a modulated signal;
- transmitting the modulated signal as the first transmission signal;
- receiving the second transmission signal, wherein the second transmission signal has information of a second data stream and a third data stream, the second data stream is modulated according to a 4-level PSK, and the third data stream is modulated according to an  $n$ -level PSK; and
- demodulating the second transmission signal to produce the second data stream and the third data stream.

Claim 66 (new)      A transmission and receiving method according to claim 65, wherein  $n$  is an integer and equal to or greater than 4.

Claim 67 (new)      A transmission and receiving method for transmitting a first transmission signal and receiving a second transmission signal, comprising:

- assigning a first data stream to a constellation in a vector space diagram to produce a modulated signal, wherein the number of signal points of the constellation for the first data stream is 4;
- transmitting the modulated signal;
- receiving the second transmission signal, wherein the second transmission signal has information of a second data stream and a third data stream, the number of signal points of the

constellation for the second data stream is 4, and the number of signal points of the constellation for the third data stream is  $n$ ; and

- demodulating the second transmission signal to produce the second data stream and the third data stream.

Claim 68 (new)      A transmission and receiving method according to claim 67, wherein  $n$  is an integer and equal to or greater than 4.

Claim 69 (new)      A transmission and receiving method for transmitting a first transmission signal and receiving a second transmission signal, comprising:

- modulating a first data stream according to a QPSK to produce a first modulated signal;
- converting the modulated signal to a CDMA converted signal according to CDMA;
- transmitting the CDMA converted signal as the first transmission signal;
- receiving the second transmission signal, wherein the second transmission signal has information of a second data stream and a third data stream, the second data stream is modulated according to a QPSK, and the third data stream is modulated according to an  $n$ -level QAM;
- converting the second transmission signal to a second modulated signal according to CDMA; and
- demodulating the second modulated signal to produce the second data stream and the third data stream.

Claim 70 (new)      A transmission and receiving method according to claim 69, wherein  $n$  is an integer and equal to or greater than 4.

Claim 71 (new)      A transmission and receiving method for transmitting a first transmission signal and receiving a second transmission signal, comprising:

- modulating a first data stream according to a 4-level PSK to produce a first modulated signal;

- converting the first modulated signal to a CDMA converted signal according to CDMA;
- transmitting the CDMA converted signal as the first transmission signal;
- receiving the second transmission signal, wherein the second transmission signal has information of a second data stream and a third data stream, the second data stream is modulated according to a 4-level PSK, and the third data stream is modulated according to an n-level PSK;
- converting the second transmission signal to a second modulated signal according to CDMA; and
- demodulating the second modulated signal to produce the second data stream and the third data stream.

Claim 72 (new)      A transmission and receiving method according to claim 71, wherein n is an integer and equal to or greater than 4.

Claim 73 (new)      A transmission and receiving method for transmitting a first transmission signal and receiving a second transmission signal, comprising:

- assigning a first data stream to a constellation in a vector space diagram to produce a first modulated signal, wherein the number of signal points of the constellation for the first data stream is 4;
- converting the first modulated signal to a CDMA converted signal according to CDMA;
- transmitting the CDMA converted signal as the first transmission signal;
- receiving the second transmission signal, wherein the second transmission signal has information of a second data stream and a third data stream, the number of signal points of the constellation for the second data stream is 4, and the number of signal points of the constellation for the third data stream is n;
- converting the second transmission signal to a second modulated signal according to CDMA; and
- demodulating the second transmission signal to produce the second data stream and the third data stream.

Claim 74 (new)      A transmission and receiving method according to claim 73, wherein n is an integer and equal to or greater than 4.

Claim 75 (new)      A receiving and transmitting method for receiving a first transmission signal and transmitting a second transmission signal, comprising:

- modulating a first data stream according to a QPSK and modulating a second data stream according to an n-level QAM to produce modulated signals;
- transmitting the modulated signals as the second transmission signal;
- receiving the first transmission signal, wherein the first transmission signal has information of a third data stream, and the third data stream is modulated according to a QPSK; and
- demodulating the first transmission signal to produce the third data stream.

Claim 76 (new)      A receiving and transmitting method according to claim 75, wherein n is an integer and equal to or greater than 4.

Claim 77 (new)      A receiving and transmitting method for receiving a first transmission signal and transmitting a second transmission signal, comprising:

- modulating a first data stream according to a 4-level PSK and modulating a second data stream according to an n-level PSK to produce modulated signals;
- transmitting the modulated signals as the second transmission signal;
- receiving the first transmission signal, wherein the first transmission signal has information of a third data stream, and the third data stream is modulated according to a 4-level PSK; and
- demodulating the first transmission signal to produce the third data stream.

Claim 78 (new)      A receiving and transmitting method according to claim 77, wherein n is an integer and equal to or greater than 4.

Claim 79 (new)      A receiving and transmitting method for receiving a first transmission signal and transmitting a second transmission signal, comprising:

- assigning a first data stream to a constellation in a vector space diagram and assigning a second data stream to a constellation in a vector space diagram to produce modulated signals, wherein the number of signal points of the constellation for the first data stream is 4 and the number of signal points of the constellation for the second data stream is  $n$ ;

- transmitting the modulated signals as the second transmission signal;

- receiving the first transmission signal, wherein the first transmission signal has information of a third data stream, the number of signal points of the constellation for the third data stream is 4; and

- demodulating the first transmission signal to produce the third data stream.

Claim 80 (new)      A receiving and transmitting method according to claim 79, wherein  $n$  is an integer and equal to or greater than 4.

Claim 81 (new)      A receiving and transmitting method for receiving a first transmission signal and transmitting a second transmission signal, comprising:

- modulating a first data stream according to a QPSK and modulating a second data stream according to an  $n$ -level QAM to produce modulated signals;

- converting the modulated signals to a CDMA converted signal according to CDMA;

- transmitting the CDMA converted signal as the second transmission signal;

- receiving the first transmission signal, wherein the first transmission signal has information of a third data stream, and the third data stream is modulated according to a QPSK;

- converting the first transmission signal to a modulated signal according to CDMA; and

- demodulating the modulated signal to produce the third data stream.

Claim 82 (new)      A receiving and transmitting method according to claim 81, wherein  $n$  is an integer and equal to or greater than 4.

Claim 83 (new)      A receiving and transmitting method for receiving a first transmission signal and transmitting a second transmission signal, comprising:

- modulating a first data stream according to a 4-level PSK and modulating a second data stream according to an n-level PSK to produce modulated signals;
- converting the modulated signals to a CDMA converted signal according to CDMA;
- transmitting the CDMA converted signal as the second transmission signal;
- receiving the first transmission signal, wherein the first transmission signal has information of a third data stream, and the third data stream is modulated according to a 4-level PSK;
- converting the first transmission signal to a modulated signal according to CDMA; and
- demodulating the modulated signal to produce the third data stream.

Claim 84 (new)      A receiving and transmitting method according to claim 83, wherein n is an integer and equal to or greater than 4.

Claim 85 (new)      A receiving and transmitting method for receiving a first transmission signal and transmitting a second transmission signal, comprising:

- assigning a first data stream to a constellation in a vector space diagram and assigning a second data stream to a constellation in a vector space diagram to produce modulated signals, wherein the number of signal points of the constellation for the first data stream is 4 and the number of signal points of the constellation for the second data stream is n;
- converting the modulated signals to a CDMA converted signal according to CDMA;
- transmitting the CDMA converted signal as the second transmission signal;
- receiving the first transmission signal, wherein the first transmission signal has information of a third data stream, and the number of signal points of the constellation for the third data stream is 4;
- converting the first transmission signal to a modulated signal according to CDMA; and
- demodulating the modulated signal to produce the third data stream.

Claim 86 (new)      A receiving and transmitting method according to claim 85, wherein  $n$  is an integer and equal to or greater than 4.